ZAYTSEV, A.A.

Representation of the sum over the states of an asymmetric top as a series in terms of the asymmetry parameter. Izv.vys.ucheb. zav.; fiz. no.4:56-62 '61. (MIRA 14:10)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Quantum electrodynamics)

A study of ...

Γ-807 (G-807) tetrode as soon as a pulse reached the latter. The authors examined tubes with oxide cathodes, 30-70 cm long, 2 and 4 cm in diameter, filled with pure neon of 0.8 mm Hg and a neon-mercury mixture of 1 mm Hg. Fig. 6 shows the development of the intensity distribution along a neon tube. Curve 1 was taken 2.5 μsec after ignition; for curve 2, t = 3 μsec; curve 3, t = 4 μsec, [Abstracter's note: t for curve 4 is omitted], curve 5, t = 8 μsec (normal conditions). The authors found a maximum of radiative intensity, due to higher electron mean energy, which appears soon after applying the electric tension. Faraday's dark space and the anode fall can be seen to develop gradually. There are 6 figures and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: NIIYaF, MAI (Scientific Research Institute of Nuclear Physics)

SUBMITTED: October 16, 1960

Card 2/2

21613
S/188/61/000/002/008/010
B108/B209

9.3150 (1049, 1140, 1532)

AUTHORS: Sanina, T. A., Zaytsev, A. A., Sanin, A. A.

TITLE: A study of the development of a discharge and determination of the plasma parameters in low-pressure tubes

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 2, 1961, 54-59

TEXT: The authors of the present paper studied the formation of various regions in a gaseous-discharge tube by way of optical observation. The probe method, which usually is employed, is a little too insensitive in the transition process from ignition to normal operation. The experimental setup is shown in Figs. 1 and 2. The discharge tube was fed with up to +700 v from a high-voltage rectifier, and by rectangular pulses of a length of between 0.5 and 60 μsec and a frequency of 50-100 cps. The intensity variation was studied by means of a ФЭУ-19 (FEU-19) multiplier. An optical system was placed before the photomultiplier and both were movable along the discharge tube. After amplification, the signal from the multiplier was fed into a cathode-ray tube. The discharge tube was ignited through a high-impedance

Card 1/2

21609

S/188/61/000/002/004/010
B113/B203

High-frequency oscillations in ...

pinch. If however, the spark gap was bounded by a small anode-cathode spacing the beam did not converge to a pinch, and no oscillations were formed. Thus, it may be concluded that the range of generation of intense oscillations is limited to the zone of the pinch. There are 5 figures and 17 references: 6 Soviet-bloc and 11 non-Soviet-bloc.

ASSOCIATION: Kafedra Elektroniki (Department of Electronics)

SUBMITTED: July 8, 1960

Card 3/3

High-frequency oscillations in ...

pressure of 10^{-2} mm Hg. A pinch is formed on a decrease in pressure. At a pressure of 7.10^{-3} mm Hg, the pinch becomes stronger. Behind it, there is a scattering, and the intensity of oscillations increases. At a pressure of 5.10^{-3} mm Hg, a sharp pinch is formed. Behind the pinch, there is another scattering, and the intensity of oscillations continues increasing. Finally, a pressure $< 3.10^{-3}$ mm Hg gives uniformly diverging beams. No oscillations were observed in this case. A certain periodicity (probably due to the effect of plasma boundaries) was noticed with respect to the distribution of intensity of oscillations with anode-cathode spacings of less than 26 mm. Considerable oscillations were also observed. A standing wave is probably formed due to electron reflections from the anode, which enables the oscillations to be amplified. If the mobile electrode has a negative potential relative to the cathode, the electrons are reflected into the plasma by a retarding field formed near the reflector. The effect of the reflector on the character of oscillations gradually decreases while moving away from the cathode, and finally vanishes. When determining the range of generation of oscillations, the authors found that oscillations existed for all anode-cathode spacings if the discharge showed a

21609
S/188/61/000/002/004/010
B113/B203

24.2120 (1049,1482,1502)
26.2311

AUTHORS: Savchenko, I.A., Zaytsev, A.A.

TITLE: High-frequency oscillations in a low-pressure discharge

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 2, 1961, 19 - 25

TEXT: The authors experimentally studied the effect of plasma boundaries on the excitation conditions and intensity distribution of electron oscillations of an argon plasma. They studied oscillations in a low-pressure discharge in a cylindrical tube of 65 mm diameter with an indirectly heated oxide cathode of 3 mm diameter. The tube also contained a mobile anticathode and a side electrode. The mobile electrode could be connected as anode or electron reflector; in the latter case, the discharge started glowing on a voltage supply between cathode and side electrode. The oscillations were indicated by a cylindrical probe 0.08 mm in diameter, which only touched the beam to keep the measurements free from interferences otherwise caused by the probe. The authors observed various pressure-dependent forms of discharge. The form shown in Fig. 2,a occurs at a

Card 1/3

67885

The Stability of a Viscous Film on a Solid in a Gas Flow S/020/60/130/06/014/059
B013/B007

computer "Strela". There are 3 figures and 1 Soviet reference.

PRESENTED: November 5, 1959, by I. I. Artobolevskiy, Academician

SUBMITTED: October 31, 1959

4

Card 4/4

67885

The Stability of a Viscous Film on a Solid in a Gas Flow S/020/60/130/06/014/059 B013/B007

The solution of this equation is set up in form of a series according to the powers of the parameter $\lambda = \alpha \mathrm{Re}$: $f(y) = \sum_{n=0}^{\infty} \lambda^n f_n(y)$. The calculation is carried out and the resulting characteristic equation is written down. In the last part of the paper the neutral curves and the critical Reynold's number are written down. The curves of the dependence of Reynold's number on α are here described as neutral curves. The minimum of $\mathrm{Re}(\alpha)$ is here called the critical Reynold's number Re_{cr}. Figure 3 shows Re_{cr} as a function of the parameters T and N. Reynold's number may also be written down in the form $\mathrm{Re} = \rho h^2 \tau / \mu^2$, where $\tau = \mu U_o / h$ denotes the tangential stress on the surface of the layer. The value of τ may be calculated according to the theory of the boundary layer in a gas or it may be determined experimentally. If Re_{cr} is known, the thickness of the stable liquid layer on a body may then be determined. Calculations were carried out on the electronic

Card 3/4

67885

The Stability of a Viscous Film on a Solid in a Gas Flow S/020/60/130/06/014/059 B013/B007

of the liquid and of the gas; g, the gravitational acceleration. The conditions holding on the interface $y = h$ are given. Small perturbations are superimposed on the principal flow: $u = U + u'$, $u_1 = U_1 + u_1'$, $v = v'$, $v_1 = v_1'$, $p = P + p'$, $p_1 = P_1 + p_1'$, where the interface $y = h$ takes the form $y = h + h'(x, t)$. The author then introduces dimensionless parameters and investigates the following special case of perturbations: $h' = \delta e^{i\alpha(x-ct)}$, $\psi = \delta f(y)e^{i\alpha(x-ct)}$, $u_1' = \delta u_1(y)e^{i\alpha(x-ct)}$, $v' = \delta U_1(y)e^{i\alpha(x-ct)}$, $p' = \delta p(y)e^{i\alpha(x-ct)}$, $p_1' = \delta p(y)e^{i\alpha(x-ct)}$. Here x and y refer to h, t to h/U_0, u' and v' to U_0, and p to $\mu U_0/h$. Next, the boundary conditions are adapted to this case. Thus, the problem of the stability of a thin liquid film on a solid in a gas flow with small ξ and σ is reduced to the investigation of the following special case of Orr and Sommerfeld's equation:

Card 2/4

$$f^{IV}(y) - 2\alpha^2 f''(y) + \alpha^4 f(y) - i\alpha\,\mathrm{Re}(y-c)[f''(y) - \alpha^2 f(y)] = 0.$$

10.2000

67885

~~10(4)~~

S/020/60/130/06/014/059
B013/B007

AUTHOR: Zaytsev, A. A.

TITLE: The Stability of a Viscous Film on a Solid in a Gas Flow

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 6, pp 1228 - 1231 (USSR)

ABSTRACT: The author calculates the stability of a viscous film on a solid in a gas flow by means of neutral curves and using Reynold's number. On the plane $y = 0$, the layer $0 \leq y \leq h$ of a viscous heavy liquid flows with the linear velocity distribution $U = \frac{U_0}{h} y$, $V = 0$. In the semispace $y > h$ a viscous heavy gas flows with the velocity $U_1 = U_1(y)$, $V_1 = 0$. No parameter of the flow investigated depends on the coordinate x. The parameters of the gas are given the index 1, while those of the liquid layer remain without an index. For the pressure distribution in the liquid and in the gas, $P = P_0 - \varrho g(y-h)$, $P_1 = P_0 - \int_0^y \varrho_1(y) g \, dy$ holds, where ϱ and ϱ_1 denote the density

Card 1/4

86897

Application of Laplace Transform to the Calculation of a Phase Sum

S/056/60/039/005/014/051
B029/B077

that are a function of several coordinates. The author thanks Professor I. N. Godnev for a discussion. There are 8 references: 6 Soviet and 2 US.

ASSOCIATION: Ivanovskiy khimiko-tekhnicheskiy institut (Ivanovo Institute of Chemical Technology)

SUBMITTED: March 21, 1960 (initially), and June 13, 1960 (after revision)

Card 4/4

86897

Application of Laplace Transform to the Calculation of a Phase Sum

S/056/60/039/005/014/051
B029/B077

L. A. Dikiy can be applied directly to calculate the trace of the energy operator $\hat{H} = -\frac{\hbar^2}{2m}\frac{d^2}{dx^2} + V(x)$. The resulting partial function is written down explicitly. The energy operator $\hat{H}$ is then assumed to be a function of three coordinates and has the ordinary form of the Hamiltonian operator for a single particle; now the problem is to find the coefficient for the operator $1/(\hat{H} + p)$ through series expansion. A recurrence formula is found, and after tedious calculations the following expression is obtained for $Q(\tau)$:

$$Q(\tau) = \frac{1}{8}\left(\pi\frac{\hbar^2}{2m}\tau\right)^{-3/2}\sum_{l=0}^{\infty}\sum_{m=0}^{l}\sum_{k=0}^{l-m}\sum_{j=0}^{l-m-k}\left(-\frac{\hbar^2}{2m}\right)^{-(m+k+j)/2}\tau^{l/2}\times$$

$$\times\frac{m!\,k!\,j!}{2^{m+k+j}}\left[\left(\frac{m}{2}\right)!\left(\frac{k}{2}\right)!\left(\frac{j}{2}\right)!\right]\left(\frac{l+m+k+j}{2}\right)!\int_{-1}^{1} B_{l,m,k,j}\,dv \qquad (7)$$

Summation extends over even l,m,k, and j. This expression can be used to calculate the phase sum for any form of the potential energy $V(r) = V(x,y,z)$. This method can also be generalized to such energy operators

Card 3/4

Application of Laplace Transform to the Calculation of a Phase Sum

S/056/60/039/005/014/051
B029/B077

$\exp(-\tau\hat{H})$. Laplace transform leads from the function $Q(\tau) = \sum_n \exp(-\tau E_n)$ to its image $\bar{Q}(p)$; E_n denotes the eigennumbers of the Hamiltonian $\hat{H}$ of the system, and $\tau = 1/kT$. The function $Q(\tau)$ satisfies the original function completely. To illustrate the function $\exp(-\tau E_n)$ the function $(E_n + p)^{-1}$, i.e. $\exp(-\tau E_n) \rightarrow (E_n + p)^{-1}$ is used. $\bar{Q}(p) = \sum_n 1/(E_n+p)$ $= Sp\left[1/(\hat{H} + p)\right]$ follows from the linearity of Laplace transform. Now the trace gives the phase sum after the inverse Laplace transform has been applied. If the Green function $\bar{G}(\vec{r},\vec{r}',p)$ of the operator $\hat{H} + p$ is known, it is possible to calculate $Q(p)$ from the equation $\bar{Q}(p) = \sum_n 1/E(_n+p)$ $= \int G(\vec{r},\vec{r},p)dv$. dv denotes the volume element, and integration goes over the definition range of the operator $\hat{H}$. Since the explicit form of the Green function is known for some simple operators only, $\bar{Q}(p)$ is computed by means of a series expansion: $\exp(-\hat{H}/kT) = 1 - (1/kT)\hat{H} + (1/kT)^2\hat{H}^2/2!$ $- (1/kT)^3\hat{H}^3/3! + \ldots\ldots$ In some special cases, the results of

Card 2/4

86897

S/056/60/039/005/014/051
B029/B077

24.4500

AUTHOR: Zaytsev, A. A.

TITLE: Application of Laplace Transform to the Calculation of a Phase Sum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 5(11), pp. 1258-1262

TEXT: In some cases it is possible to calculate the phase sum Q $= \sum_n \exp(-E_n/kT)$ of a physical system by applying such methods where Q can be computed without knowing the eigenvalue E_n of the energy operator H of this system. But these methods do not permit an expansion of Q in a power series of T or 1/T. Now, the author proposes a method for expanding a phase sum in a power series of 1/kT. The method is based on the application of Laplace transform to the function Q(1/kT). The first part deals with the use of Laplace transform for calculating the trace of the operator

83609

The Relationship Between the Vibrations and the Rate of Loss of Charged Particles in a Cylindrical Low-pressure Plasma Placed in a Longitudinal Magnetic Field

S/056/60/038/005/042/050
B006/B063

of the effective rate of the loss of charged particles due to diffusion are caused by a macroscopic displacement of the plasma filament within the magnetic field. There are 2 figures and 4 references: 1 Soviet, 1 US, and 1 British.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: January 21, 1960

Card 3/3

S/056/60/038/005/042/050
B006/B063

The Relationship Between the Vibrations and the Rate of Loss of Charged Particles in a Cylindrical Low-pressure Plasma Placed in a Longitudinal Magnetic Field

magnetic field strength varied from 0 to 2.5 koe. Without a magnetic field, the discharge had a noise of 10^3 - 10^6 cps. The magnetic field increased the noise and affected its spectrum. A critical field strength gave rise to sudden oscillations whose intensity was 10 to 15 times higher than that of the noise level. The pulse height of these oscillations at the electrodes reaches 7 - 10 v. This critical field strength is independent of the current but increases with pressure:

p	0.05	0.07	0.1	0.2 [torr]
H_{cr}	750	990	1400	1630 [oe] .

Simultaneously with the occurrence of the oscillations, the anode plate current abruptly drops by 5-8%. Fig. 1 shows the results of measurements of the effect of the field on the electric field strength, carried out by means of a probe. The results of measurement of the effect of the magnetic field upon the amperage on the chamber walls are given in Fig. 2. A few other details of the oscillations are discussed. The authors believe that the kind of oscillations observed and the increase

Card 2/3

83609

S/056/60/038/005/042/050
B006/B063

9,9600
26.2311

AUTHORS: Zaytsev, A. A., Vasil'yeva, M. Ya.

TITLE: The Relationship Between the Vibrations and the Rate of Loss of Charged Particles in a Cylindrical Low-pressure Plasma Placed in a Longitudinal Magnetic Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1639 - 1640

TEXT: The principal purpose of the present work was to investigate the plasma oscillations of a positive column placed in a constant longitudinal magnetic field. Besides, the authors studied the effect of this field upon the electric field strength along the column and the diffusion current on the walls of the discharge tube. The latter had an internal diameter of 2 cm, an electrode spacing of 90 cm, and was filled with He (0.2 - 0.05 torr). The plate current could be varied between 50 and 350 ma. The gas had an ionization degree of 0.1%. The discharge tube was placed in a solenoid in such a manner that the ends carrying the cathode and the anode projected by 25 and 15 cm, respectively. The

Card 1/3

ZAYTSEV, A.A.; KOSYAKOV, V.N.; RYKOV, A.G.; SOBOLEV, Yu.P.; YAKOVLEV, G.N.

Kinetics of reduction of americium(V) by hydrogen peroxide. Radiokhimiia 2 no.3:348-350 '60. (MIRA 13:10)
(Americium) (Hydrogen peroxide)

ZAYTSEV, A.A.; KONYAKOV, V.N.; RYKOV, A.G.; SOBOLEV, Yu.P.; YAKOVLEV, G.N.

Disproportionation of americium(V). Radiokhimiia 2 no.3:339-347 '60.
(MIRA 13:10)

(Americium)

80859

About Waves on the Surface of Viscous Heavy Liquid Formed Under the Action of Constant Tangential Tension

S/055/60/000/02/06/009

where $\lambda = \alpha R$, gives an easily integrable system for the determination of the $f_n(y)$. Assuming that c is real, then one obtains a quadratic equation with coefficients for c depending on α and then

$$R = \sqrt{\frac{2\alpha^2 - Q_{oo}(c-1)}{\alpha^2(c-1)(Q_{22}c^2 + Q_{21}c + Q_{2o})}}, \tag{38}$$

where Q_{ij} depend only on α. The obtained results are discussed in brief; the author gives neutral curbes and regions of instability in the αR-plane. He represents the dependence $c = c(\alpha)$ for several flow parameter. There are 3 figures.

ASSOCIATION: Kafedra gidromekhaniki (Department of Hydrodynamics)

SUBMITTED: December 19, 1959

Card 3/3

About Waves on the Surface of Viscous Heavy Liquid Formed Under the Action of Constant Tangential Tension

S/055/60/000/02/06/009

K-tension of the surface

(6) $$v' = \frac{\partial h'}{\partial t} + \frac{\tau h}{\mu} \frac{\partial h'}{\partial x}$$

on the surface

(7) $$u' = v' = 0 \text{ on } y = 0,$$

he expresses the tangential and normal tensions by the velocity of deformation, he introduces the flow function, goes over to dimensionless coordinates and seeks waves of the following form (in dimensionless coordinates):

(17) $$h' = \delta e^{i\alpha(x-ct)}, \quad \psi = \delta f(y) e^{i\alpha(x-ct)}, \quad p' = \delta p(y) e^{i\alpha(x-ct)}.$$

Then from linearized Navier-Stokes equations it follows

(22) $$f^{IV}(y) - 2\alpha^2 f''(y) + \alpha^4 f(y) - i\alpha R(y-c)\left[f''(y) - \alpha^2 f(y)\right] = 0,$$

where $R = \frac{\tau h^2 \rho}{\mu^2}$. The arrangement

(27) $$f(y) = \sum_{n=0}^{\infty} \lambda^n f_n(y),$$

Card 2/3

80859

10.2000 S/055/60/000/02/06/009

AUTHOR: Zaytsev, A. A.

TITLE: About Waves on the Surface of Viscous Heavy Liquid Formed Under the Action of Constant Tangential Tension

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya I, matematika, mekhanika, 1960, No. 2, pp 53-58

TEXT: Let a viscous heavy liquid fill up the strip $0 \leq y \leq h$ of the xy-plane. On the surface let act a constant tangential tension τ and the pressure p_0. In the liquid there arises a flow with the velocity

(1) $$U = \frac{\tau}{\mu} y$$

and a pressure

(2) $$P = P_0 + \varrho g(h-y).$$

The flow is superposed by small disturbances so that all parameters get additional terms

(3) $$u = U+u', \quad v = v', \quad p = P+p'$$

and the surface becomes $y = h+h'(x,t)$. The author demands

(5) $$p_\tau = \tau, \quad p_n = P_0 + K\frac{\partial^2 h'}{\partial x^2},$$

Card 1/3

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Ch. VII. Plasma
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ZAYTSEV, A.A.

PHASE I BOOK EXPLOITATION SOV/4705

Moskovskiy elektrotekhnicheskiy institut svyazi (Moscow Electrotechnical Institute of Communications)

Elektronika (Electronics) [Moscow] Izd-vo Svyaz', 1960. 351 p. Errata slip inserted. 15,000 copies printed.

Ed.: K. A. Zaytsev, Professor; Tech. Ed.: K. K. Tikhomirov.

PURPOSE: This book has been approved by the Ministry of Higher and Secondary Special Education, USSR, as a textbook for schools of higher education. It can be also used by scientific personnel working in the fields of radio engineering and electronics.

COVERAGE: The book presents problems of vacuum, cathode, semiconductor, and gas electronics, on which is based the operation of vacuum-tube and gas-filled devices, including microwave devices and also apparatus and instruments used in electron optics. It is assumed that the readers of this book have preliminary preparation in the fundamentals of nuclear physics, quantum mechanics, statistical physics and electrodynamics. The book was written by a group of lecturers of the Kuybyshev Division of Moscow State University.

Card 1/10

Chapters I, II, and III were written by Professor K. A. Zaytsev; Ch. IV, by Professor K. K. Dreyzen and Docent V. K. Lopatin; Ch. V, by Professor A. V. Frank and Assistant Ye. K. Zolotin; Ch. VI, by Professor K. A. Zaytsev and Professor K. A. Zaytsev; Ch. VII, by Docent A. A. Zaytsev and Docent G. K. Soltsev. The authors thank Professor K. A. Zaytsev [illegible] Docent A. A. Zaytsev, who reviewed the book. There are 76 references: 68 Soviet (in-cluding 14 translations), 6 English, and 2 German.

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Card 2/10

The Investigation of the Formation of Mobile Layers by the Method of Perturbations

"stratification wave" decreases in the order He, He+Hg, Ar+Hg. There are 2 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitcta im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: March 12, 1959, by M. A. Leontovich, Academician

SUBMITTED: March 11, 1959

The Investigation of the Formation of Mobile Layers by the Method of Perturbations

in the intervals of time between the successive pulses. In the state which is a near approach to the threshold of the spontaneous occurrence of mobile layers, oscillations are damped only very slowly, so that, under these conditions, seconds are necessary for the oscillations to vanish. The attached figures show various oscillograms. Immediately connected with the motion of the layers, is an oscillation of the anode fall with the frequency of the mobile layers. Therefore, a current oscillation in the discharge circuit always occurs whenever the positive column contains mobile layers. The action upon the cathode range is not the basic condition necessary for the artificial excitation of the layer-like state. Experiments show that layers are formed if pulses are applied to the probe which is at a sufficiently large distance from the cathode. This is always brought about in such a manner that the layer-like shape of the column forms with some delay towards the side of the anode. In all cases the velocity of the "stratification wave" was greater than the velocity of the motion of layers. The

The Investigation of the Formation of Mobile Layers by the Method of Perturbations

shape as time progresses. It is upon this fact that the investigation method employed in this paper is based, for the authors use the method of pulse perturbations. The tension pulses (of rectangular shape with a width of 1 μsec and a frequency of 50 sec^{-1}) are transmitted either on to a cylindrical probe or on to a metal ring (which may be differently orientated with respect to the cathode). The transition processes in the positive column were investigated by means of a photoelectronic multiplier and a cathode oscillograph with "waiting development". Experimental difficulties are briefly mentioned. In helium and at pressures of 1 torr the positive column is of homogeneous shape in the range of low amperages. Below the critical amperage of 110 ma the positive column has oscillations of the brightness of luminescence with decreasing amplitude as a result of pulse perturbations. The degree of oscillation damping depends on amperage. The more amperage differs from critical amperage, the stronger damping will be. At an amperage of more than 6 ma, the oscillation amplitude no longer decreases to zero

24(3), 9(3) SOV/20-127-1-16/65

AUTHORS: Zaytsev, A. A., Vasil'yeva, M. Ya.

TITLE: The Investigation of the Formation of Mobile Layers by the Method of Perturbations (Issledovaniye formirovaniya podvizhnykh sloyev metodom vozmushcheniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 63-66 (USSR)

ABSTRACT: For the investigation mentioned in the title the positive column in the transition state from the homogeneous to the layer-like shape must be investigated. In a previous paper by A. A. Zaytsev (Ref 1) it was shown that by the superposition of oscillation from without over the steady discharge (which, in the case of a lacking foreign interference, is characterized by a homogeneous positive column), artificially mobile layers can be caused and maintained. This is, however, possible only if the positive column, due to the peculiarities of the processes taking place in it, has a tendency to fray out. The mobile layers may be formed by a single perturbation of the discharge state, but in that case the layers formed immediately become blurred and vanish, so that the positive column immediately returns to the original (i.e. homogeneous)

Card 1/4

On a Possibility of Determining the Potential in the Plasma Space From the Characteristic of Noises Occurring in a Gas Discharge

SOV/56-36-5-58/76

As filling gas krypton was used within the pressure range of from 0.01 to 1 torr; the discharge currents were between 6 and 140 ma. Figure 1 shows a typical probe characteristic and the corresponding noise curves, figure 2 shows potential distribution along the discharge axis determined by the usual as well as by the "noise" method. There is good agreement between the curves. There are 2 figures and 4 references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: January 14, 1959

Card 2/2

21(7)

AUTHORS: Zaytsev, A. A., Vasil'yeva, M. Ya., Mnev, V. N. SOV/56-36-5-58/76

TITLE: On a Possibility of Determining the Potential in the Plasma Space From the Characteristic of Noises Occurring in a Gas Discharge (O vozmozhnosti opredeleniya potentsiala prostranstva plazmy po charakteristikam shumov, vozbuzhdayemykh v gazovom razryade)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1590-1591 (USSR)

ABSTRACT: As the usual probe-method by means of which potential determinations in the plasma are carried out is connected with numerous difficulties, the authors of the present "Letter to the Editor" suggest that the noises occurring in a gas discharge be recorded and that conclusions be drawn from their characteristic as to the course of the potential. In gas-filled tubes with a glow cathode noises with amplitudes of up to 1 v occur with discharges in wide frequency ranges (kilo-megacycles). The authors carried out noise measurements in the probe-cathode range in cylindrical tubes with oxide cathode by using the noise meter IP-12M.

Card 1/2

frequency of the observed oscillations). Within the range of sufficiently strong oscillations an anomalous scattering of the primary beam can be visually observed. This fact is, finally, discussed in short. There are 1 figure and 4 references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: February 19, 1959

out without probe influences. The authors endeavored to eliminate these influences and to investigate the non-influenced oscillation distribution. For this purpose they used a cylindrical tube of 7 cm diameter and an electrode gap of 2.2 cm. A figure shows the distribution of oscillation intensities at a pressure for which the free lengths of path of the primary electrons were great as against the electrode gap; in the diagram the intensities in dependence on the distances between the probe and the cathode are plotted. It was found that the oscillation distribution, which is representable by a periodic function, has amplitudes which increase in the direction towards the anode. The intensity of oscillations and the coefficient of increase grow with a decrease of pressure. Oscillation intensity may vary by more than the thousandfold under these experimental conditions along the beam. At sufficiently high pressures, if electron free length of path is small with respect to the electrode gap, the oscillations are damped towards the anode, and one maximum only can be found. Measurements showed that the spatial oscillation period can be well approximated by the formula $l = 2\pi v_0/\omega$ (v_0 = velocity of electrons in the beam [cm/sec], and ω = cyclic

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AUTHORS: Zaytsev, A. A., Leonov, G. S., Savchenko, I. A.

TITLE: On the Oscillations of Plasma Electrons (O kolebaniyakh elektronov plazmy)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1332-1334 (USSR)

ABSTRACT: The authors of the present "Letter to the Editor" deal with investigations of electronic oscillations in plasmas of viscous gases at pressures of from 3.10^{-1} to 5.10^{-4} torr. Recording of the oscillation was carried out by means of a heterodyne circuit with an independent generator for the decimeter range and an independent amplifier for the intermediate frequencies. Work was carried out at a frequency of 30 megacycles on the 10 megacycle band. The upper limit at which regular oscillations could still be observed was found to be independent of the nature of the gas (He: 2.10^{-1}, Ar: 10^{-2}, Xe: 6.10^{-3} torr). For the purpose of solving the problem of oscillation excitation it is of great importance to investigate oscillation distribution along the discharge axis; hitherto, such investigations have not been carried

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SOV/48-23-8-17/25

An Investigation of Anode Oscillations in Low-pressure Discharges

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An Investigation of Anode Oscillations in Low-pressure Discharges

of pressure on the amplitude of the anode oscillation and the amount of the anode drop is represented for investigations in rare gases. As stated by the values of table 1, the diminution of the anode causes an increase of the amplitude and of the frequency of the anode oscillation. The investigations show that the anode drop is steady for pressures of above $3 \cdot 10^{-1}$ torr, but holds an oscillation below this pressure. Further, the effect of the kind of gas on the anode oscillation is investigated, and it was found that frequency decreases with increasing gas mass. The two forms of the anode drop already described by Langmuir are discussed, and it is finally found that the range of the anode is unsteady for a small anode, and that the anode drop exhibits an oscillation. This oscillation is said to be a relaxation oscillation and causes a periodic change of the gas conductivity at the cathode. This oscillation is not accompanied, however, by a wavelike process expanding over the whole positive column. There are 5 figures, 2 tables, and 5 references, 4 of which are Soviet.

ZAYKOVSKIY, I.I.

Planning the territory of a school camp. Biol. v shkole no.3:82-83 My-Je '61. (MIRA 14:7)

1. Orenburgskiy institut usovershenstvovaniya uchiteley.
(Camps)

ZAYKOVSKIY, I. I.

School evenings dedicated to chemistry. Khim. v shkole 17 no.4:70-73 Jl-Ag '62. (MIRA 15:10)

1. Pedagogicheskiy institut, Orenburg.

(Chemistry--Study and teaching)

ZAYKOVSKIY, L.

Stand for starting pots. Yun.nat. no.3:40 Mr '62. (MIRA 15:4)
(Farm equipment)

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A162/[illegible]

New Technological Process for Stamping of Connecting Rods

Figure 5:

Forging Rolls

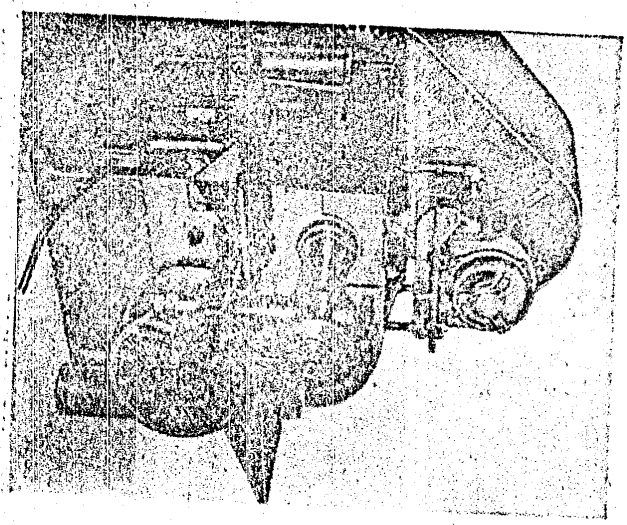

Рис. 5. Калибры валков.

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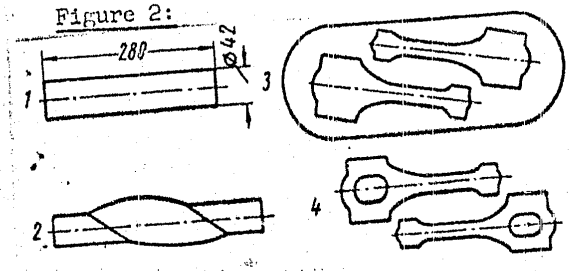
A162/A029

New Technological Process for Stamping of Connecting Rods

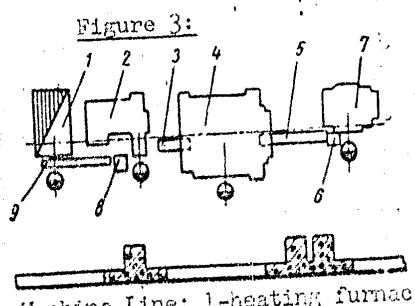
rolls to a 1,600-ton crank press which gives it its final shape in three strokes. The ridges are coined afterwards on a 2,000-ton coining press. The forging rolls operations with 3 passes requires 5-6 sec. A 30-mm shorter billet is needed for the process and is three times as productive as stamping in presses, 323 g of metal are economized on every rod, i.e., 21%, and the mechanical properties of rolled billets are higher.

Figure 2:



Technological Process for Stamping Connecting Rods on M3MA(MZMA): 1-billet for 2 parts; 2-distortion bending; 3-stamping in 2 operations; 4-trimming.

Figure 3:



Machine Line: 1-heating furnace; 2-forging rolls; 3-hot-stamping crank press with a force of 1,600t; 5,9-chain transporters; 6,8-tables; 7-trimming crank press.

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S/182/60/000/007/012/016/XX
A162/A029

AUTHORS: Zaykovskiy, G.S.; Dytynenko, M.I.; Fomenko, I.A.

TITLE: New Technological Process for Stamping of Connecting Rods

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, 1960, No. 7, pp. 15 - 17

TEXT: The forging of connecting rods at several Soviet plants is described. At the Automobile Plants of Gor'kiy and the Moscow Plant imeni Likhachev the process is time-consuming and requires much skill from the press operator. Eleven forming stages are necessary. The technology of the process has been improved at the Moskovskiy zavod malolitrazhnykh avtomobiley (Moscow Small-Capacity Automobile Plant). The two connecting rods are stamped simultaneously from one billet on a 2,000-ton mechanical forging press in three operations (Fig. 2). A different, simpler and swifter process is used at the Luganskiy zavod imeni 20-letiya Oktyabrya (Lugansk Plant imeni of the 20-th October Anniversary) for manufacturing the "Moskvich" automobile connecting rod. It consists of a machine line (Fig. 3) and includes forging rolls and hot stamping presses. The billets are cut from a 42-mm round rolled bar of "45" steel on shears in the line. The 40-ton forging rolls are shown in a photo (Fig. 5). The billet passes from the

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ZAYKOVSKIY, G.S., inzh.; OSIPENKO, V.F., inzh.; KOZLOVSKIY, B.V., inzh.

Automatic machine for removing chamfers with abrasive tools. Mashinostroenie no.4:59-60 Jl-Ag '64. (MIRA 17:10)